CLAIMS

What is claimed is:

1. An absorption solution/refrigerant system comprising:

a high-stage generator including a plurality of smoke tube channels receiving turbulators, said high stage generator being connected to receive a source of heated air, and said high stage generator also receiving an absorption fluid flowing around said smoke tube channels to be heated by said heated air in said smoke tube channel; and

wherein at least some of said turbulators have an elongate connecting member secured to a number of blades, said blades including flanges extending from a central web, there being laterally outermost and laterally inner flanges, with at least some of said laterally inner flanges being non-rectangular in cross-sectional shape.

2. An absorption solution/refrigerant system as set forth in claim 1, wherein said laterally inner flanges extend in a first direction from said central web at a non-normal angle.

3. An absorption solution/refrigerant system as set forth in claim 2, wherein said laterally inner flanges have a nominal rectangular shape, with a cutout at an outermost edge spaced furthest from said central web.

4. An absorption solution/refrigerant system as set forth in claim 3, wherein said laterally inner flange elements include a pair of flange elements laterally spaced and extending in said first direction and an intermediate flange extending in a second direction from said central web, with said intermediate flange being positioned generally aligned over said connecting member, and said intermediate flange also being provided with a cutout portion.

5. An absorption solution/refrigerant system as set forth in claim 1, wherein said laterally inner flanges extending from said central web in a first direction, and said laterally outer flanges extending in a second direction from said central web.

6. An absorption solution/refrigerant system as set forth in claim 5, wherein said laterally inner flanges have a smaller cross-sectional area than said laterally outer flanges.

7. An absorption solution/refrigerant system as set forth in claim 6, wherein said laterally inner flange elements include a pair of flange elements laterally spaced and extending in said first direction and an intermediate flange extending from said central web in a second direction, and aligned to be over said connecting member.

8. An absorption solution/refrigerant system as set forth in claim 6, wherein said laterally inner flanges have a triangular cross-sectional shape.

9. An absorption solution/refrigerant system as set forth in claim 8, wherein said laterally outermost flanges also have a triangular cross-sectional shape.

10. An absorption solution/refrigerant system as set forth in claim 1, wherein said source of heated air is the exhaust of an engine.

11. An absorption solution/refrigerant system as set forth in claim 10, wherein said engine is a micro-turbine.

12. A heat exchanger comprising:

a heat exchanger body including a plurality of channels receiving turbulators, said body being connected to receive a source of heated fluid, and said body also receiving a fluid to flow around said channels, and to be heated by said heated air in said channels; and

said turbulators have an elongate connecting member secured to a number of blades, said blades including flange elements extending from a central web at a non-normal angle, with said central web being secured to said connecting element, and at least one other of said turbulators including a central web secured to its own connecting element.

13. A heat exchanger as set forth in claim 12, wherein laterally inner ones of said flanges have a nominal rectangular shape, with a cutout at an outermost edge spaced further from said central web.

14. A heat exchanger as set forth in claim 13, wherein said laterally inner flange elements include a pair of flange elements laterally spaced and extending in a first direction from said central web at said non-normal angle, and there being an intermediate flange between said pair of laterally inner flange elements, and extending in a second direction from said central web, with said second direction also being non-normal to said central web.

15. A heat exchanger as set forth in claim 12, wherein said angle is between 30 and 45° relative to the plane of the central web.

16. A heat exchanger comprising:

a heat exchanger body including a plurality of channels receiving turbulators, said body being connected to receive a source of heated fluid, and said body also receiving a fluid to flow around said channels, and to be heated by said heated air in said channels; and

said turbulators including a central web secured to a connecting member, and having laterally inner flanges extending in a normal orientation relative to said central web, and having a non-rectangular cross-section.

17. A heat exchanger as set forth in claim 16, wherein there are also laterally outer flanges which have a non-rectangular cross-section, and are also normal to said central web.

18. A heat exchanger as set forth in claim 16, wherein said laterally inner flanges have a smaller cross-sectional area than said outer flanges.

19. A heat exchanger as set forth in claim 16, wherein said laterally inner flanges have a triangular cross-section.

20. A heat exchanger as set forth in claim 16, wherein said non-rectangular shape includes cutaway portions at each lateral edge of said flange.